INITIAL ENVIRONMENTAL EXAMINATION -- Amendment

PROJECT/ACTIVITY DATA

Project/Activity Name:	Health Services Delivery to the Haitian Population
Geographic Location(s) (Country/Region)**:**	Haiti
Amendment (Yes/No), if Yes indicate # (1, 2...):	Yes, Amendment #1
Implementation Start/End Date (FY or M/D/Y)**:**	April 2019-September 2021
If Amended, specify New End Date:	
Solicitation/Contract/Award Number(s):	
Implementing Partner(s):	
Bureau Tracking ID:	LAC-IEE-19-22
Tracking ID of Related RCE/IEE (if any)**:**	LAC-IEE-17-36
Tracking ID of Other, Related Analyses:	

ORGANIZATIONAL/ADMINISTRATIVE DATA

Implementing Operating Unit(s): (e.g. Mission or Bureau or Office)	Haiti Mission
Other Affected Operating Unit(s):	
Lead BEO Bureau:	Latin America and the Caribbean
Funding Account(s) (if available)**:**	
Original Funding Amount:	$98.5 million
If Amended, specify funding amount:	No additional funding required
If Amended, specify new funding total:	
Prepared by:	Debra Allen-Reid, U.S. Forest Service/METI
Date Prepared:	April 11, 2019

ENVIRONMENTAL COMPLIANCE REVIEW DATA

Analysis Type:	X Environmental Examination	☐Deferral
Environmental Determination(s):	☐Categorical Exclusion(s) X Negative ☐Positive ☐Deferred (per 22 CFR 216.3(a)(7)(iv)	
IEE Expiration Date (if applicable)**:**	September 2021	
Additional Analyses/Reporting Required:	None	
Climate Risks Identified (#):	Low ___0___ Moderate ___#___ High ___#___	
Climate Risks Addressed (#):	Low ___0___ Moderate ___#___ High ___#___	

THRESHOLD DETERMINATION AND SUMMARY OF FINDINGS

PROJECT/ACTIVITY SUMMARY

In accordance with Title 22, Code of Federal Regulations, Part 216 (22 CFR 216), an IEE (LAC-IEE-17-36) was prepared and approved on April 4, 2017 providing a preliminary review of the reasonably foreseeable effects on the environment of health activities under the USAID/Haiti Health Services Delivery Project.

This document amends LAC-IEE-17-36 (USAID/Haiti Health Services Delivery Project) to address providing a point-of-use water purification system, an approved activity noted in the IEE Threshold Decision on page 4 and in the IEE itself on page 3. No new activities are being added nor are any activities in the IEE being eliminated; this document merely provides clarification for a water treatment method. This Amendment covers specifically an electrolytic salt-based point-of-use water purification system (the Stream™ system by Aqua Research, Appendices A and B) which will be added at all sites implementing the Health Services Delivery Project. This Amendment is subject to all findings contained in the parent IEE.

ENVIRONMENTAL DETERMINATIONS

The IEE recommended a Negative Determination with Conditions, pursuant to 22 CFR 216.3(a)(2)(iii), for health service delivery activities that have potential for negative impact on the environment. Among the categories listed (IEE page 10) is “point-of-use water treatment”.

Upon approval of this document, the determinations become affirmed, per Agency regulations (22 CFR 216).

TABLE 1: ENVIRONMENTAL DETERMINATIONS

Projects/Activities	Categorical Exclusion Citation (if applicable)	Negative Determination	Positive Determination [1]	Deferral [2]
Project/Activity 1: WASH		X	☐	☐
Sub-activity 1.1: Water Purification		X	☐	☐
Project/Activity 2: Title		☐	☐	☐

CLIMATE RISK MANAGEMENT

No additional climate risks beyond those included in the original IEE (LAC-IEE-17-36) have been identified.

BEO SPECIFIED CONDITIONS OF APPROVAL

N/A

IMPLEMENTATION

In accordance with 22 CFR 216 and Agency policy, the conditions and requirements of this document become mandatory upon approval. This includes the relevant limitations, conditions and requirements in this document as stated in Sections 3, 4, and 5 of the IEE and any BEO Specified Conditions of Approval.

[1] Positive Determinations require preparation of a Scoping Statement and Environmental Assessment.
[2] Deferrals must be cleared through an Amendment to this IEE prior to implementation of any deferred activities.

USAID APPROVAL OF INITIAL ENVIRONMENTAL EXAMINATION

PROJECT/ACTIVITY NAME: _Water Purification Amendment to Health Services Delivery to Haitians

Bureau Tracking ID: LAC-IEE-19-22

Approval: _____ 5/14/2019
Gary C. Juste, Mission Director — Date

Clearance: _____ 04/26/2019
Réginalde G. Masse, AOR — Date

Clearance: _____ April 12, 2019
Abdel Abellard, Mission Environmental Officer — Date

Clearance: by E-mail _____ April 12, 2019
Diana Shannon, Acting Regional Environmental Advisor — Date

Clearance: by E-mail _____ May 14, 2019
Christopher Ryder, Regional Legal Officer — Date

Clearance: _____ 14 May 2019
Christian Barratt, Deputy Mission Director — Date

Concurrence: Diana Shannon _____ 5/17/2019
[NAME], _____ Bureau Environmental Officer [*required*] — Date

Concurrence: N/A _____ _____
[NAME], _____ Bureau Environmental Officer [*other BEOs required for cross Bureau funding or geographic responsibilities*] — Date

DISTRIBUTION:

INITIAL ENVIRONMENTAL EXAMINATION -- AMENDMENT

CONTENTS

1.0 PROJECT/ACTIVITY DESCRIPTION

1.1 PURPOSE OF THE PARENT IEE

The purpose of the parent IEE, in accordance with Title 22, Code of Federal Regulations, Part 216 (22 CFR 216), is to provide a preliminary review of the reasonably foreseeable effects on the environment of the USAID intervention described herein and recommend determinations and, as appropriate, conditions, for these activities. Upon approval, these determinations become affirmed, and specified conditions become mandatory obligations of implementation. This IEE also documents the results of the Climate Risk Management process in accordance with USAID policy (specifically, ADS 201mal).

The IEE is a critical element of USAID's mandatory environmental review and compliance process meant to achieve environmentally sound design and implementation. Potential environmental impacts should be addressed through formal environmental mitigation and monitoring plans (EMMPs) and/or Environmental Assessments (EAs), if needed.

This document is an Amendment to the parent IEE, specifically covering a specific water purification system (Annexes A and B).

1.2 PROJECT/ACTIVITY OVERVIEW

In accordance with Title 22, Code of Federal Regulations, Part 216 (22 CFR 216), an IEE (LAC-IEE-17-36) was prepared and approved on April 4, 2017 providing a preliminary review of the reasonably foreseeable effects on the environment of health activities under the USAID/Haiti Health Services Delivery Project.

This document amends LAC-IEE-17-36 (USAID/Haiti Health Services Delivery Project) to address providing a point-of-use water purification system, an approved activity noted in the IEE Threshold Decision on page 4 and in the IEE itself on page 3. No new activities are being added nor are any activities in the IEE being eliminated; this document merely provides clarification for a water treatment method. This Amendment covers specifically an electrolytic salt-based point-of-use water purification system (the Stream™ system by Aqua Research, Annex A and B) which will be added at all sites implementing the Health Services Delivery Project. This Amendment is subject to all findings contained in the parent IEE.

1.3 PROJECT/ACTIVITY DESCRIPTION

The overall purpose of the four-year integrated Health Service Delivery (HSD) project is to improve the health status of communities across Haiti. This will be achieved by working in close collaboration with the *Ministère de la Santé Publique et de la Population* (MSPP), both at the central and departmental levels, to advance two interrelated objectives:

1. Increase utilization of quality, essential health services in line with the MSPP's approved Essential Package of Services (EPS) both at primary health care facilities and at the community level; and
2. Strengthen local management and operational capacities to deliver health services.

HSD activities are designed to directly contribute to an *AIDS-Free Generation*, *Ending Preventable Child and Maternal Death* (EPCMD), and addressing *Neglected Tropical and other Infectious Diseases* through service delivery and health system strengthening. In addition, HSD activities will support achievement of USAID's Nutrition Strategy (2014) and the Gender Equity and Women's Empowerment Policy (2012). HSD also reflects current guidance with regard to funding and program priorities for PEPFAR 3.0. The overall USAID/Haiti Health Strategy is in alignment with: a) USG Strategic Frameworks and USAID/Haiti Country Development Cooperation Strategy, b) the 2012-2022 Government of Haiti National Strategic Plan, c) Haiti's priorities for the Sustainable Development Agenda; and e) Haiti's commitments to the Global Nutrition for Growth Compact. The HSD Project will be a core component of the USAID/Haiti Mission's Country Development and Cooperation Strategy, now under development, which is expected to cover the five year period 2018-2023

The HSD project will help achieve the goals of the Global Health Security Agenda (GHSA),[3] which aims to accelerate progress toward a world safe and secure from infectious disease threats. In accordance with Haiti's 5-year GHSA roadmap, the project will support the capacity building necessary to prevent, detect, and rapidly respond to existing and emerging health challenges such as cholera and Zika. It is also expected that the HSD project will play a key role in response to natural disasters such as Hurricane Matthew, in terms of helping to quickly re-establish access to primary health care for affected populations and increasing mobile service delivery, for example. To help the country strengthen its human and institutional capacity development in all aspects of the public health system, HSD managers will fully collaborate with health authorities and other key stakeholders at national and local levels.

The Health Services Delivery Project Activity Related to this Amendment is:

- small scale development of potable water supplies

TABLE 2: DEFINED OR ILLUSTRATIVE PROJECTS/ACTIVITIES AND SUB-ACTIVITIES

Project/Activity 1 — WASH
Sub-activity 1.1 Water purification

Will this project/activity involve construction[4] as defined by ADS 201 and 303? Yes ☐ No X

2.0 BASELINE ENVIRONMENTAL INFORMATION

[3] https://www.ghsagenda.org/

[4] **Construction, as defined by ADS 201 and 303,** includes: construction, alteration, or repair (including dredging and excavation) of buildings, structures, or other real property and includes, without limitation, improvements, renovation, alteration and refurbishment. The term includes, without limitation, roads, power plants, buildings, bridges, water treatment facilities, and vertical structures. In the box below, describe any construction planned for this project/activity. Refer to ADS 201maw for required Construction Risk Management procedures.

2.1 LOCATIONS AFFECTED AND ENVIRONMENTAL CONTEXT (ENVIRONMENT, PHYSICAL, CLIMATE, SOCIAL, THREATENED AND ENDANGERED SPECIES)

USAID will engage with the MSPP to review the current network, composed of 164 sites, to assess whether the HSD project should maintain the current geographic focus or shift to focus more on the most populated, hard to reach areas or areas with greater health burdens. The *Zones Ciblées* will be reviewed to determine whether the zones originally identified still have the highest need, as measured by available data on access to health services and other health indicators including morbidity and mortality indicators. It is envisioned that the HSD project will continue to support the existing USAID PEPFAR priority sites and the 32 sites that are implementing the RBF strategy. Given the migratory flows between Haiti and the Dominican Republic, it is expected that the HSD project will identify and propose key health facilities in the border region that should be included in the geographic catchment areas. Among other strategies or tools, a decentralized service delivery model could use mobile technologies, mobile clinics, rally posts, treatment groups for patients on ART and strengthen referral and counter-referral systems.

The point-of-use water purification system is a small portable unit which will be employed within the selected sites. The sources of drinking water to be treated by these units are expected to be from any of the following locally available sources: (1) Ponds or spring improvements, (2) Hand-dug wells, (3) Small-diameter boreholes, (4) Wells with hand pumps, (5) Roof rainwater catchments, or (6) Small dams and seasonal impoundments. No other environmental or social conditions are expected from the use of these units.

2.2 APPLICABLE AND APPROPRIATE PARTNER COUNTRY AND OTHER INTERNATIONAL STANDARDS (E.G. WHO), ENVIRONMENTAL AND SOCIAL LAWS, POLICIES, AND REGULATIONS

- USAID SECTOR ENVIRONMENTAL GUIDELINES: WATER SUPPLY AND SANITATION-- PARTIAL UPDATE 2015 | LAST FULL UPDATE: PRIOR TO 2003 (http://www.usaidgems.org/Documents/SectorGuidelines/Wat%20San%20Guideline%20Final_w_GCC_Addition__May11.pdf)

- A Global Overview of National Regulations and Standards for Drinkingwater Quality. Geneva: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.

2.3 COUNTRY/MINISTRY/MUNICIPALITY ENVIRONMENTAL CAPACITY ANALYSIS (AS APPROPRIATE)

N/A

3.0 ANALYSIS OF POTENTIAL ENVIRONMENTAL RISK

PROJECT/ACTIVITY 1: WASH

Risks as disclosed in the parent IEE.

SUB-ACTIVITY 1.1: WATER PURIFICATION

Risks listed in Table 3.A

TABLE 3A. POTENTIAL IMPACTS – PROJECT/ACTIVITY 1

Project/Activity	Potential environmental and social impacts
Project/Activity 1: WASH	As listed in the parent IEE
Sub-activity 1.1: Water Purification	Operator misunderstanding of new technology could cause interruption in provision of potable water.

4.0 ENVIRONMENTAL DETERMINATIONS

4.1 RECOMMENDED ENVIRONMENTAL DETERMINATIONS

The following table summarizes the recommended determinations based on the environmental analysis conducted. Upon approval, these determinations become affirmed, per 22 CFR 216. Specified conditions, detailed in Section 5, become mandatory obligations of implementation, per ADS 204.

TABLE 4**: ENVIRONMENTAL DETERMINATIONS**

Projects/Activities	Categorical Exclusion Citation (if applicable)	Negative Determination	Positive Determination [5]	Deferral[6]
Project/Activity 1: WASH		X	☐	☐
Sub-activity 1.1: Water purification		X	☐	☐

4.2 CLIMATE RISK MANAGEMENT

No additional climate risks beyond those included in the original IEE (LAC-IEE-17-36) have been identified; however, it is worth emphasizing that locations relying on rain catchment, streams, springs or ponds as a water source could be affected if reduced rainfall occurs.

[5] Positive Determinations require preparation of a Scoping Statement and Environmental Assessment.
[6] Deferrals must be cleared through an Amendment to this IEE prior to implementation of any deferred activities.

5.0 CONDITIONS AND MITIGATION MEASURES

5.1 CONDITIONS

The environmental determinations in this IEE are contingent upon full implementation of the following general implementation and monitoring requirements, as well as ADS 204 and other relevant requirements.

5.1.1 During Pre-Award:

5.1.1.1 Pre-Award Briefings: As feasible, the design team and/or the cognizant environmental officer(s) (e.g., MEO, REA, BEO) will provide a pre-award briefing for potential offerors on environmental compliance expectations/responsibilities at bidders' conferences.

5.1.1.2 Solicitations: The design team, in coordination with the A/CO, will ensure solicitations include environmental compliance requirements and evaluation criteria. A/CO will ensure technical and cost proposal requirements include approach, staffing, and budget sufficient for complying with the terms of this IEE.

5.1.1.3 Awards: The A/COR, in coordination with the A/CO, will ensure all awards and sub-awards, include environmental compliance requirements.

5.1.2 During Post-Award:

5.1.2.1 Post-Award Briefings: The A/COR and/or the cognizant environmental officer(s) (e.g., MEO, REA, BEO) will provide post-award briefings for the IP on environmental compliance responsibilities.

5.1.2.3 Workplans and Budgeting: The A/COR will ensure the IP integrates environmental compliance requirements in work plans and budgets to comply with requirements, including EMMP implementation and monitoring.

5.1.2.4 Staffing: The A/COR, in coordination with the IP, will ensure all awards have staffing capacity to implement environmental compliance requirements.

5.1.2.5 Records Management: The A/COR will maintain environmental compliance documents in the official project/activity file and upload records to the designated USAID environmental compliance database system.

5.1.2.6 Host Country Environmental Compliance: The A/COR will ensure the IP complies with applicable and appropriate host country environmental requirements unless otherwise directed in writing by USAID. However, in the case of a conflict between the host country and USAID requirements, the more stringent shall govern.

5.1.2.7 Work Plan Review: The A/COR will ensure the IP verifies, at least annually or when activities are added or modified, that activities remain with the scope of the IEE. Activities outside of the scope of the IEE cannot be implemented until the IEE is amended.

5.1.2.8 IEE Amendment: If new activities are introduced or other changes to the scope of this IEE occur, an IEE Amendment will be required.

5.1.2.14 USAID Monitoring Oversight: The A/COR or designee, with the support of the cognizant environmental officer(s) (e.g., MEO, REA, BEO), will ensure monitoring of compliance with established requirements (e.g., by desktop reviews, site visits, etc.).

5.1.2.16 Environmental Compliance Mitigation and Monitoring Plan: The A/COR will ensure the IP develops, obtains approval for, and implements Environmental Mitigation and Monitoring Plans (EMMPs) that are responsive to the stipulated environmental compliance requirements.

5.1.2.17 Environmental Compliance Reporting: The A/COR will ensure the IP includes environmental compliance in regular project/activity reports, using indicators as appropriate; develops and submits the Environmental Mitigation and Monitoring Reports (EMMRs); and completes and submits a Record of Compliance (RoC) describing their implementation of EMMP requirements in conjunction with the final EMMR or at the close of sub activities (as applicable). And where required by Bureaus or Missions, ensure the IP prepares a closeout plan consistent with contract documentation for A/COR review and approval that outlines responsibilities for end-of-project operation, the transition of other operational responsibilities, and final EMMR with lessons learned.

5.1.2.18 Corrective Action: When noncompliance or unforeseen impacts are identified, IPs notify the A/COR, place a hold on activities, take corrective action, and report on the effectiveness of corrective actions. The A/COR initiates the corrective action process and ensures the IP completes and documents their activities. Where required by Bureaus or Missions, ensure Record of Compliance is completed.

5.2 AGENCY CONDITIONS

5.2.4 Other Supplemental Analyses: The A/COR will ensure supplemental environmental analyses that are called for in the IEE are completed and documented.

5.3 MITIGATION MEASURES

The mitigation measures presented in this section constitute the minimum required based on available information at the time of this IEE Amendment and the environmental analysis in section 4. These measures shall provide general direction for completing the project/activity environmental mitigation and monitoring plan (EMMP).

NEGATIVE DETERMINATIONS WITH CONDITIONS

A Negative Determination with Conditions is recommended, pursuant to 22 CFR216.3(a)(2)(iii), for Health Service Delivery activities that have potential for negative impact on the environment in the following category:

- Technical assistance for WASH point of use water treatment, including potable water disinfection.

Recommended Conditions

The use of the salt-based electrolytic water purification system requires the conditions listed in the Mitigation Measures in Table 5A to be implemented. These measures not only protect the environment but ensure the availability of potable water with minimal interruption at project sites. Because this technology is new, multiple levels of training and a system of back-up purification units that can be readily deployed are being recommended. The manufacturer of the units has committed to providing training materials in Creole.

PROJECT/ACTIVITY 1

WASH ACTIVITIES AS ADDRESSED IN THE PARENT IEE.

PROJECT/ SUB-ACTIVITY 1.1

WATER PURIFICATION

TABLE 5A. SUMMARY OF MITIGATION MEASURES FOR PROJECT/ACTIVITY 1

Project/Activity	Mitigation Measure(s)
Project/Activity 1: WASH	Technical assistance per the parent IEE
Sub-activity 1.1: Water Purification	(1) Implementing Partner training in the use of the selected purification system (Annexes A and B) at each project site. (2) Trained repair technicians located in each of four regions (North, Central, South, and Greater Port-au-Prince) to handle difficulties beyond normal system maintenance, (3) At least one spare unit placed with each of those regional technicians as a back-up to be used should repairs be required that would put the unit out of service for an unacceptable amount of time. 4) An Environmental Mitigation and Monitoring Plan prepared by the Implementing Partners (per the IEE) that must include: a. Training of system operators b. Proper storage and handling of the small quantities of salt required to run the system c. A battery back-up where electricity is the primary energy source to run the system. d. Following USAID requirements for monitoring treated water for arsenic and coliform content

6.0 LIMITATIONS OF THIS INITIAL ENVIRONMENTAL EXAMINATION

The determinations recommended in this document apply only to projects/activities and sub-activities described herein. Other projects/activities that may arise must be documented in either a separate IEE, an IEE amendment if the activities are within the same project/activity, or other type of environmental compliance document and shall be subject to an environmental analysis within the appropriate documents listed above.

Other than projects/activities determined to have a Positive Threshold Determination, it is confirmed that the projects/activities described herein do not involve actions normally having a significant effect on the environment, including those described in 22 CFR 216.2(d).

In addition, other than projects/activities determined to have a Positive Threshold Determination and/or a pesticide management plan (PERSUAP), it is confirmed that the projects/activities described herein do not involve any actions listed below. Any of the following actions would require additional environmental analyses and environmental determinations:

- Support project preparation, project feasibility studies, or engineering design for activities listed in §216.2(d)(1);
- Affect endangered and threatened species or their critical habitats per §216.5, FAA 118, FAA 119;
- Provide support to extractive industries (e.g. mining and quarrying) per FAA 117;
- Promote timber harvesting per FAA 117 and 118;
- Lead to new construction, reconstruction, rehabilitation, or renovation work per §216.2(b)(1);
- Support agro-processing or industrial enterprises per §216.1(b)(4);
- Provide support for regulatory permitting per §216.1(b)(2);
- Lead to privatization of industrial facilities or infrastructure with heavily polluted property per §216.1(b)(4);
- Research, testing, or use of genetically engineered organisms per §216.1(b)(1), ADS 211
- Assist the procurement (including payment in kind, donations, guarantees of credit) or use (including handling, transport, fuel for transport, storage, mixing, loading, application, clean-up of spray equipment, and disposal) of pesticides or activities involving procurement, transport, use, storage, or disposal of toxic materials. Pesticides cover all insecticides, fungicides, rodenticides, etc. covered under the Federal Insecticide, Fungicide, and Rodenticide Act per §216.2(e) and §216.3(b).

7.0 REVISIONS

Per 22 CFR 216.3(a)(9), when ongoing programs are revised to incorporate a change in scope or nature, a determination will be made as to whether such change may have an environmental impact not previously assessed. If so, this IEE will be amended to cover the changes. Per ADS 204, it is the responsibility of the USAID A/COR to keep the MEO/REA and BEO informed of any new information or changes in the activity that might require revision of this environmental analysis and environmental determination.

ANNEXES

ANNEXES A and B: Stream System™ Specifications and Use Instructions.

ANNEX A.

Introduction

The STREAM system is the second generation of a portable disinfectant generator to produce a chlorine based mixed-oxidant disinfectant using only salt and electrical power. The first generation device, developed in the 1990s, was intended for researchers and distributors to make quantities of oxidants for demonstration purposes. The STREAM system was developed by Aqua Research to operate for applications in disasters and low-income settings. As such, it is a very robust system that is water-tight and can operate in a rain storm with the lid open. It is housed in a strong water-proof plastic case about the size of a briefcase.

Overall Specifications

Weight: 18 pounds

Dimensions: 16.5 Inches x 13 inches x 6.8 inches

Chlorine Production as Sodium Hypochlorite: 1.3 gallons per hour

Oxidant Concentration: 5,000 mg/l

Power Requirements: 110/220 Single phase VAC or 12 VDC from car battery or solar

Salt Consumption: 0.2 lbs per hour

Chemistry Performance:

All Aqua Research systems, including STREAM, produce a chlorine-based mixed oxidant solution. Concentrations of the disinfectant are easily measured by conventional chlorine measurement strategies. The technology was the subject of a multi-million dollar research program funded by the Defense Advanced Research Projects Agency (DARPA) to produce a powerful disinfectant for soldiers operating in the field on "found" water. The mixed-oxidant solution is a combination of chlorine and hydrogen peroxide, a combination that makes it effective even at high pH conditions, and effectively kills all classes of micro-organisms, including virus, bacteria and protozoa, including Giardia and Cryptosporidium – which cannot be inactivated by chlorine alone.

Operational Advantages:

- Easily portable in overhead or under seat storage
- Compact design for palletizing.
- Comes with all peripheral components including power adapters for 110 VAC, 220VAC, or 12 VDC to use with a car battery or solar system. An optional solar power package with 400 watts of solar panels and a Yeti 1400 controller are available as a separate option.
- Safe – less than 1% disinfectant concentration (10,000 mg/l) thereby avoiding hazardous material category defined by OSHA
- Below 1% concentration – avoids non-compliance with California EPA limits on chlorate by-product dosages in drinking water
- 5000 mg/l concentration directly from the system – complies with World Health Organization (WHO) and Center for Disease Control and Prevention (CDC) dosing strategy for hazardous biological treatment (Ebola, etc). Does not require dilution as is the case with disinfectants generated at higher doses
- Fault tolerant – Electrolytic systems are subject to carbonate scale formation due to poor quality salt or high calcium content in the brine makeup water. The STREAM system has several electronic control features that make it tolerant to poor quality salt or hard water. A reverse polarity cleaning system keeps the electrolytic cell clean to avoid damage to the cell. An electronic management system advises the operator when system cleaning is required. When the system does need to be cleaned, it is a simple process using common vinegar.
- Consistent output - An electronic management system maintains the system output at 5,000 mg/l concentration even if the salt to water ratio is mixed wrong – i.e. if the operator mixes the brine solution and makes it too rich or too lean. This feature assures dosing is always consistent.
- A thermal management system protects the system from overheating.
- The system automatically shuts down when the brine solution tank is empty.

- Easy dilution for dosing – Add 10 parts of water to get 500 ppm dosing – WHO and CDC standards for health care facility surface cleaning. Dilute 2000:1 for drinking water applications.
- Experienced team – Aqua Research is led by Rodney Herrington, 25 years in on-site generation, a leader in on-site generation and treatment technology. Many patents on the technology.
- Experience operating in third-world environments including Haiti. STREAM systems are used at NGO compounds and orphanages in Africa, India, Puerto Rico as well as in Haiti. The small hand held, individual use systems, H2gO Purifiers are being used and distributed in over 50+ countries by NGOs such as Operation Blessing International.
- Support team established in Haiti, Aqua Research Haiti (distributor of Aqua Research and independent of Aqua Research) – managed by local Haitians.
- Developed and manufactured in Albuquerque, NM.

ANNEX B.

STREAM™ Community Water Disinfection System

Rapid, portable, and continuous water disinfection using common salt

The STREAM™ Community Water Disinfection System makes water safe to drink by generating a continuous flow of disinfecting solution from common salt. The disinfectant destroys all classes of microorganisms, including viruses, bacteria, and protozoan cysts. The STREAM can be operated using 110/220 VAC, or 12 VDC from a car battery or solar panel. The system is ideal for small communities, disaster relief and humanitarian missions.

Treats up to 240,000 L of water per day (60,000 gals)*

SPECIFICATIONS:

- **Disinfectant Flow:** 4.8 L/hr (1.3 gph)) of solution at a concentration of 5,000 mg/l
- **Electrical Service:** 110/220 VAC, 2 A, 50/60 hz 12 VDC, 17 A
- **Salt Consumption:** 0.1 kg/hr of salt (0.2 lbs/hr)
- **System Weight:** 8.2 kgs (18 lbs)
- **Dimensions:** 42 x 33 x 17.3 cm (16.5 x 13 x 6.8 in)
- **Material of Construction:** High impact waterproof plastic case

**at a dose of 2.5 mg/L*

How To Use:

1. Make a brine solution in a separate container (such as a 20-liter bucket) by mixing salt and water in a 15 g/l ratio.
2. Connect electrical power to the unit and turn on the switch to pump brine through an electrolytic cell, where it is converted to a chlorine disinfectant.
3. Collect the disinfectant in another container (i.e. 20-liter bucket).
4. Add the disinfectant to any untreated fresh water (such as river, lake, stream, puddle, etc.)
5. Wait 30 minutes to kill viruses, bacteria, and most protozoa. The solution can also be used anywhere a chlorine-based disinfectant is used, including to clean surfaces in hospitals, sanitize hands, and rinse vegetables.

The STREAM™ System is designed to be extremely rugged – it will survive multiple 2-meter drops to concrete. The unit can be turned on and operated with the lid open, and then immersed in water and still operate without damage.

THE STREAM™ SYSTEM WAS DEVELOPED BY AQUA RESEARCH LLC, CREATOR OF THE H2GO PURIFIER. OUR MISSION IS TO IMPROVE ACCESS TO CLEAN WATER IN THE DEVELOPING WORLD THROUGH AFFORDABLE, SIMPLE, AND SUSTAINABLE WATER TREATMENT SOLUTIONS. THE STREAM™ SYSTEM IS IDEAL FOR SMALL COMMUNITIES COLLECTING WATER AT A CENTRAL POINT, FOR ENTREPRENEURS OPERATING WATER KIOSKS, AND FOR MEDICAL SETTINGS AND FIRST RESPONDERS SANITIZING WITH CHLORINE IN THE MIDST OF OUTBREAKS SUCH AS EBOLA OR CHOLERA.

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